

Houston, December 9, 2020

Subject: LCFS Capacity Credits for Slow-Fill Hydrogen Stations

Dear Jordan:

This letter is being submitted by Resato North America, LLC to the California Air Resources Board (CARB) Low Carbon Fuel Standard (LCFS) in response to the LCFS Public Workshop held on Oct 14-15, 2020 to discuss potential regulatory revisions to the LCFS Standard. The letter includes a request for the inclusion of hydrogen Slow-Fill Stations in the Hydrogen Refueling Infrastructure (HRI) crediting mechanism that is currently in place to give "Capacity Credits" to "Fast-Fill" hydrogen stations.

In Slide 36 of the CARB presentation used on Oct 14, there is some reference to the regulatory changes being considered to specify inputs to the HySCapE model, to include a reference to dispenser flow rate, but no formal reference to slow fill stations that will be governed by SAE J2601-4 when the standard becomes available in early 2021.

Resato North America considers there is a strategic opportunity to grow the FCEV market base into the regions adjacent to the primary urban areas where hydrogen stations are being sited using lower-cost Slow-Fill stations. For example, adding a small number of Slow-Fill stations in strategic areas along the 101 corridor would accelerate the adoption of FCEVs along that corridor and provide much needed resilience to the network, which would further comfort early adopters of FCEVs.

The most recent awards made by CEC for funding hydrogen infrastructure (GFO-19-602) has focused on further expanding the hydrogen station network in the urban centers. This potentially leaves regions like the Central Coast with no access to hydrogen (and no FCEV sales) for several years to come unless an alternative approach, like Slow-Fill stations, is used.

We recognize the importance of building more resilience into the urban network, but we also consider that the FCEV territory has to grow beyond the urban centers to capitalize on the opportunities for vehicle sales and hydrogen use in an ever-expanding territory in California. We believe that this can be accomplished using Slow-Fill stations, which is much better suited for areas of lower density of FCEVs. This would provide connectivity between the urban networks and expand the FCEV penetration into the less dense regions of California. In the Central Coast, the details of this approach are drawn substantially from the [Tri-Counties Hydrogen Readiness Plans](#) (San Luis Obispo, Ventura and Santa Barbara counties), prepared using CEC funding.



With the addition of a small number of Slow-Fill stations in adjacent areas to the main corridors there would be more incentive for Original Equipment Manufacturers (notably Toyota, Hyundai and Honda) to add FCEVs to their Dealerships in the region, and to provide FCEV servicing and support. Slow-Fill stations can be used effectively to improve North-South connectivity, to support FCEV fleet sales in the regions, which in turn can make FCEVs available to a full range of customers, and to provide some level of redundancy should an anchor station become unavailable.

We recognize the need to develop an alternative funding approach to implement this Slow-Fill strategy. The Air pollution Control Districts in the Central Coast are willing to consider partial funding of these stations using the Clean Air Grant programs, but they are insufficient to make the initial stations economically viable without other support. If Slow-Fill hydrogen stations were eligible for LCFS HRI Capacity Credits – as is currently the case for Fast-Fill hydrogen stations and EV charging stations – it would help considerably in closing the financial gap. The current method for allocating these credits to hydrogen Fast-Fill stations is based on the HyScape methodology developed by DOE. The method assumes Fast-Fill technology, and the model has that assumption built into the calculation.

It appears that Slow-Fill technology was not considered when the LCFS Capacity Credit regulatory method was developed. We are now making this request for CARB to consider adapting the method or adding a second method that allows for Slow-Fill stations to take advantage of the Capacity Credits. These credits are critical for the economic viability of expanding the network of hydrogen fueling stations.



We do not see Slow-Fill stations as “competing” with the Fast-Fill network, but rather as a complementary approach that sets the stage in the region for subsequent growth and transition to Fast-Fill stations. This model has been successfully adopted in other growth areas of the world as a vector of adoption of FCEVs and further development of a Fast-Fill infrastructure. Slow-Fill stations have several advantages that counter the disadvantage of longer fill-time. For example, the life cycle emissions are less because there is no cooling required, the equipment footprint is considerably smaller, the cost is much lower, and lead time to installation is much faster. The decentralized nature of this approach also makes it appealing for using locally generated green hydrogen. When the region reaches a point where additional Fast-Fill stations are installed, the Slow-Fill stations can be readily moved to new locations to continue the growth strategy.

In summary, please consider this request to make LCFS Capacity Credits available to Slow-Fill hydrogen stations installed in California.

Sincerely,

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